

PROCEEDINGS
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A NEW POLYDESMID MILLIPED FROM THE
SOUTHERN APPALACHIANS, WITH REMARKS ON
THE STATUS OF *DIXIDESMUS* AND A PROPOSED
TERMINOLOGY FOR POLYDESMID GONOPODS

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The diplopod generic name *Dixidesmus*, presently comprehending some eleven named taxa endemic to eastern United States, was established by R. V. Chamberlin in 1943. The genus was defined as being very similar to *Pseudopolydesmus* in gonopod structure, “. . . but differing in having a spine or spine-like process in the angle above the papillose cushion and in having on outer side, at or distad of the level of the cushion, a retrorse tooth or barb with a spur on or near its base, the latter rarely abortive or absent.” *Dixidesmus* has subsequently come into general use by American diplopodologists despite its foundation upon a single character (the second cited by Chamberlin admitted to be variable).

Since 1951 I have had material of an undescribed species which completely negates the supposed difference between the two “genera” mentioned and, in my view, requires the abolition of *Dixidesmus*. Publication of this species has been repeatedly deferred in the hope it might be included in a revision of the American forms, but as the completion of that revision still seems remote, I wish to place the new taxon on record in order to justify combination of *Dixidesmus* with *Pseudopolydesmus* in a general classification of Diplopoda now in preparation.

Genus *Pseudopolydesmus* Attems

Polydesmus (nec Latreille 1802) American authors prior to 1943.
Pseudopolydesmus Attems, 1898, Denk. Akad., Wien, 67: 270, 479.—

Brolemann, 1916, Ann. soc. ent. France, 84: 569.—Verhoeff, 1931, Zool. Anz., 94: 305.—Attems, 1940, Tierreich, 70: 139.—Carl, 1941, Zool. Anz. 133: 291.—Chamberlin, 1943, Bull. Univ. Utah, biol. ser., 8(2): 17. Type species, *Polydesmus canadensis* Newport, 1844 (? = *serratus* Say, 1821).

Dixidesmus Chamberlin, 1943, Bull. Univ. Utah, biol. ser., 8(2): 18.—Chamberlin & Hoffman, 1958, U. S. Nat. Mus. Bull. 212:65. Type species, *Dixidesmus tallulanus* Chamberlin, by original designation. [New synonymy.]

Diagnosis: Gonopod large, falcate in general shape, with prominent endomerite subtended by small dentiform process (*m* 1) on median side; prostatic groove running distad from median to lateral side, debouching not into a small fossa within endomerite but into a deeply invaginated groove ("*Samenslauch*," Carl) which extends proximad to base of femoral region, and is then reflexed distad to open on distad side of endomerite. Apex of telopodite with a linear series of flattened setae, and, usually, a small cluster of spiniform setae from base of distalmost process on the median side (*m* 4).

Species: Approximately ten, all endemic to North America east of the Great Plains, concentrations of species in the southern Appalachians and in the Ozark region.

Remarks: The combination of the names *Dixidesmus* and *Pseudopolydesmus* is suggested here because of the discovery of a species which in some ways resembles "*D.*" *branneri* (e.g. fusion of lateral telopodite processes *e* 2 and *e* 3) but which has the proximal lateral process (*e* 1) reduced to a small point or in many specimens, absent entirely. As this process was the criterion upon which *Dixidesmus* rested, and as the examination of numerous species of American polydesmids has revealed no other basis for making generic distinctions, there seems no justification for continued recognition of *Dixidesmus*.

This merger will bring the following names into combination with *Pseudopolydesmus* for the first time: *branneri* Bollman, 1887; *catskillus* Chamberlin, 1947; *christianus* Chamberlin, 1946; *echinogon* Chamberlin, 1942; *erasus* Loomis, 1943; *gausodicrorrhachus* Johnson, 1954; *humilidens* Chamberlin, 1943; *nitidus* Bollman, 1887; *penicillus* Chamberlin, 1943; *phanus* Chamberlin, 1951; *sylvicolens* Chamberlin, 1943; and *tallulanus* Chamberlin, 1943. The great majority of these names are either subspecific in rank or are strict synonyms, and will be accounted in a forthcoming paper. Bibliographic reference to all of these names is to be found in the "Checklist of the Millipeds of North America" (Chamberlin & Hoffman, 1958).

***Pseudopolydesmus collinus*, new species**

Figures 1, 2

Diagnosis: A medium-sized species of the genus (length to 23 mm), with the following diagnostic gonopod characters: process *m* 1, *m* 2, and

m 4 present; *e* 1 vestigial, sometimes wanting; *e* 2 and *e* 3 basally fused and stipate; *e* 4 present.

Type-material: Male holotype, ♂ and ♀ topoparatypes from "Pinnacles of Dan," ± 4 miles southwest of Vesta, Patrick County, Virginia; 22 April 1972, R. L. Hoffman & L. S. Knight, leg. (Hoffman collection).

Holotype: Adult male, 22.0 mm in length, 3.8 mm in maximum width, W/L ratio 17.3%. Segmental widths across paranota as follows:

Segment 1-2.3 mm	Segment 10-3.7 mm
2-2.6	12-3.5
4-3.2	14-3.4
6-3.8	16-3.2
8-3.8	18-2.0

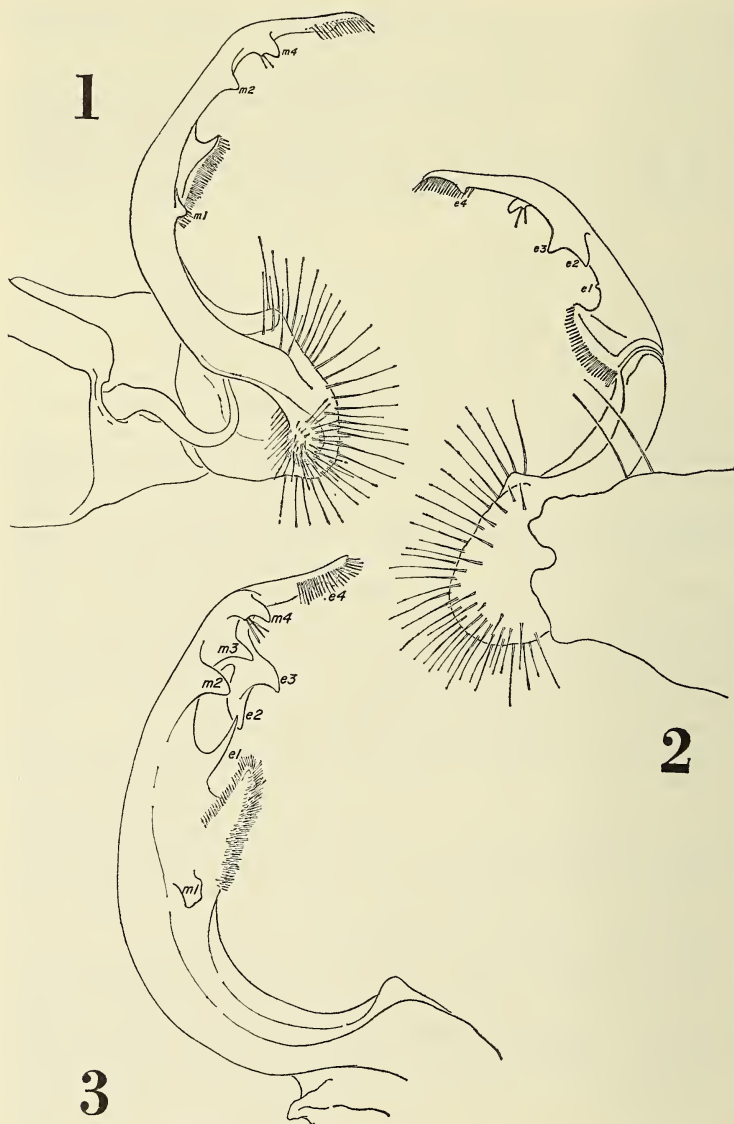
Color in life dorsally uniform light brown, legs and sterna lighter, no suffusion of reddish pigmentation on paranota.

Segmental sculpture typical for the family. Most metaterga with three transverse series of convex areas middorsally: a large area occupying the anterior half of the tergum between stricture and transverse sulcus, four smaller pentagonal areas immediately behind the sulcus, and six smaller areas along the posterior edge of the segment. On the posteriormost segments these latter areas project slightly caudad, producing a subserate edge between the paranota. Latter moderately broad, the anterior and lateral edges forming a continuous curvature with four minute lateral denticles; peritreme broad, convex, the pore small and located in a dorsolateral depression behind middle of peritrematic length. Dorsum of paranota with an almost circular prominent convexity.

Sterna bicrucially impressed, each quadrant moderately setose; sterna between legs 3, 4, 5, 6, 9, 11, and 13 produced into two prominent conical paramedian lobes, the lobes anterior to gonopods profusely setose; sterna between legs 7 and 10 produced into subhemispherical subcoxal swellings a little further apart than the other lobes. Prefemora and femora of most legs somewhat enlarged, ventral sides of tibiae and tarsi with a row of moderate-sized sphaerotrichomes, preceded on the anterior side by a series of much smaller but similar setae.

Coxae of gonopods large, mostly exerted, directed caudal parallel to each other and to median axis of body, with the usual concavity on the ventral side for retraction of telopodites, lateral ventral edge with two macrosetae. Telopodite of normal polydesmid form, arcuate caudally, the prefemur densely setose but without processes, acropodite slender, with a terminal series of macrosetae and endomerite at midlength, medial side with three marginal processes (*m* 3 apparently absent) and lateral with four (*e* 1 vestigial or absent, *e* 2 and *e* 3 fused and carried on a common stalk, *e* 4 of normal form and position, see Figs 1 and 2).

Remarks: An account of female genitalia is deferred for the planned revision of the genus. Externally the female is similar to the male in size, color, and peripheral characteristics.



FIGS. 1-2. *Pseudopolydesmus collinus*, n. sp.: 1, left gonopod of male topoparatype, mesal aspect; 2, the same gonopod, lateral aspect.

FIG. 3. *Pseudopolydesmus branneri* (Bollman): left gonopod of specimen from Roan Mountain, Tennessee, slightly oblique caudo-mesal aspect, to show complete series of telopodite processes.

This species has been taken in association with both *Pseudopolydesmus serratus* and *P. branneri* in western Virginia, as well as in biotopes in which those two species were absent. *P. collinus* is easy to recognize in the field, being about 3–5 mm shorter than *serratus* which it otherwise resembles, and 2–4 mm smaller than *branneri* which is characterized by having a black middorsum and reddish paranota. No observations suggest any difference in the phenology of the three, nor, overtly, in habitat preferences.

The specific name reflects the fact that although the species occurs in the southern Appalachians it clearly prefers moderate elevations and has not been found so far above 3600 ft.

Distribution: The species is known to me from the following counties (detailed citations deferred for a later account): Kentucky: Carter Co.; West Virginia: McDowell Co.; Virginia: Alleghany, Floyd, Franklin, Henry, Montgomery, Patrick, and Pittsylvania counties. It seems to be most abundant in central southwestern Virginia on and just east of the Blue Ridge, but occurs on river bluffs well out into the Piedmont, and extends westward to easternmost Kentucky.

GONOPOD TERMINOLOGY

The characterization of polydesmid gonopods has long been impeded by the lack of standardized names for the various spines, branches, or processes which adorn the posterior face of the telopodite. Although some names have been used for European species, they are usually vernacular in origin and often not easily translatable, in any case often long and cumbersome.

It has long seemed possible to me to devise a somewhat different approach which I venture to present here in a brief outline. First of all, the invention of meaningful names of classical origin is not only difficult but perhaps at the present time a little premature, so that one alternative is to develop a numerical system of designation reflecting the actual location of the processes as well as providing an indication of serial homologies between species.

The telopodite of the gonopod in polydesmids, as seen in a caudal or obliquely caudal aspect (Fig. 3) is fairly broad at its base and gradually tapers to a much thinner distal end, although even there it retains the dimension of breadth, and may be correctly stated to have two distinct sides: *ectal* and *mesal*. Except for the large setiferous endomerite, which occupies a median position on the gonopod, the various smaller processes all originate on one side or the other and this fact provides an initial dichotomy in their classification: a given process is either mesal or ectal in its place on the telopodite and may be indicated by the prefix *m* or *e*.

Arbitrarily taking as a standard that species which is most complex in terms of number of processes, such as *P. branneri*, we can apply a numerical designation to those on each side starting with the most

proximal. On each side there appear to be no more than four processes, although in some forms one or more may be suppressed, or two may be coalesced and carried by a common pedicle. Thus, in *P. branneri*, the processes on the mesal side are *m* 1, *m* 2, *m* 3, and *m* 4, on the ectal side *e* 1, *e* 2+3, and *e* 4, by which it is indicated that 2 and 3 are joined at the base. In the American species, process *m* 1 is generally present near the base of the endomerite, and *e* 4 is usually present beside the terminal row of setae. *M* 4 usually carries several setae at its base and is easy to recognize as a result. The greatest variation thus appears to occur with processes 2 and 3 on each side.

Using the above terminology, the original generic diagnosis for *Dixidesmus* quoted above could be rewritten as follows: "Gonopod with process *e* 1 present, spiniform or acicular; process *e* 2 present, usually with a smaller *e* 3 at its base."

It is generally necessary to examine a gonopod from both sides, as frequently it is impossible to see all of the processes due to concealment of a small process by juxtaposition of a larger one; this is shown very clearly in Figs. 1 and 2.

LITERATURE CITED

- CHAMBERLIN, R. V. 1943. On some genera and species of American millipeds. *Bull. Univ. Utah, biol. ser.*, 8(2):1-20, figs. 1-42.
- , AND R. L. HOFFMAN. 1958. Checklist of the millipeds of North America. *U. S. Nat. Mus. Bull.* 212:i-iii, 1-236.